

chain nodes :

7

ring nodes :

1 2 3 4 5 6 8 9 10 11 12 13 14 15 16 17 18 19

chain bonds :

3-12 5-7 9-19

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 8-9 8-13 9-10 10-11 11-12 12-13 14-15 14-19 15-16 16-17 17-18 18-19

exact/norm bonds :

3-12 5-7 8-9 8-13 9-10 9-19 10-11 11-12 12-13 14-15 14-19 15-16 16-17 17-18 18-19

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6

G1:C,O

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS8:Atom 9:Atom 10:Atom 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom

L4 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2007 ACS on STN
 AN 2006:1252358 CAPLUS
 DN 146:36422
 TI Tetrahydropyrane derivatives comprising several rings containing oxygen
 and method for the production thereof
 IN Poetsch, Eike; Lietzau, Lars; Meyer, Volker; Binder, Werner; Jaehrling,
 Kai; Klasen-Memmer, Melanie; Manabe, Atsutaka; Wittek, Michael
 PA Merck Patent G.m.b.H., Germany
 SO PCT Int. Appl., 72pp.
 CODEN: PIXXD2
 DT Patent
 LA German
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | WO 2006125530 | A1 | 20061130 | WO 2006-EP4425 | 20060511 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| PRAI | EP 2005-11322 | A | 20050525 | | |
| OS | MARPAT 146:36422 | | | | |

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2007 ACS on STN
 AN 2006:1251777 CAPLUS
 DN 146:36022
 TI Pyran/dioxan derivatives and use thereof in liquid crystal media
 IN Lietzau, Lars; Czanta, Markus
 PA Merck Patent G.m.b.H., Germany
 SO PCT Int. Appl., 73pp.
 CODEN: PIXXD2
 DT Patent
 LA German
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | WO 2006125511 | A1 | 20061130 | WO 2006-EP4140 | 20060503 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| PRAI | EP 2005-11324 | A | 20050525 | | |
| | EP 2005-17654 | A | 20050812 | | |

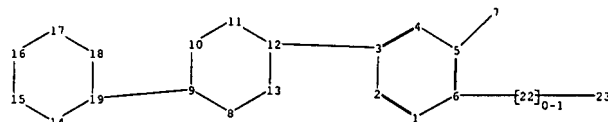
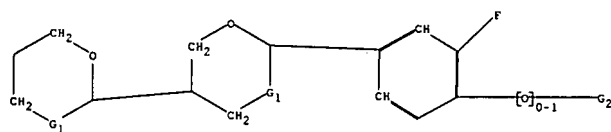
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2007 ACS on STN
 AN 1997:127433 CAPLUS
 DN 126:150650
 TI Preparation of dioxanyl-dioxane liquid crystal for liquid crystal display
 IN Poetsch, Eike; Binder, Werner; Krause, Joachim; Tarumi, Kazuaki
 PA Merck Patent Gmbh, Germany
 SO Ger. Offen., 25 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|--|------|----------|------------------|----------|
| PI | DE 19525314 | A1 | 19970116 | DE 1995-19525314 | 19950712 |
| PRAI | DE 1995-19525314 | | 19950712 | | |
| OS | CASREACT 126:150650; MARPAT 126:150650 | | | | |

L4 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2007 ACS on STN
 AN 1996:705482 CAPLUS
 DN 125:343068
 TI Di-1,3-dioxane derivatives useful as liquid crystals for electro-optical liquid crystal displays
 IN Buchecker, Richard; Marck, Guy; Villiger, Alois
 PA F. Hoffmann-La Roche Ag, Switz.
 SO Eur. Pat. Appl., 26 pp.
 CODEN: EPXXDW
 DT Patent
 LA German
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------------------|------|----------|-----------------|----------|
| PI | EP 732330 | A1 | 19960918 | EP 1996-103434 | 19960306 |
| | EP 732330 | B1 | 20010912 | | |
| | R: CH, DE, FR, GB, IT, LI, NL | | | | |
| | US 5667721 | A | 19970916 | US 1996-604630 | 19960221 |
| | JP 08253469 | A | 19961001 | JP 1996-47026 | 19960305 |
| | HK 1011360 | A1 | 20011214 | HK 1998-112322 | 19981126 |
| PRAI | CH 1995-754 | A | 19950316 | | |
| OS | MARPAT 125:343068 | | | | |



chain nodes :

7 22 23

ring nodes :

1 2 3 4 5 6 8 9 10 11 12 13 14 15 16 17 18 19

chain bonds :

3-12 5-7 6-22 9-19 22-23

ring bonds :

1-2 1-6 2-3 3-4 4-5 5-6 8-9 8-13 9-10 10-11 11-12 12-13 14-15 14-19 15-16 16-17 17-18 18-19

exact/norm bonds :

3-12 5-7 6-22 8-9 8-13 9-10 9-19 10-11 11-12 12-13 14-15 14-19 15-16 16-17 17-18 18-19 22-23

normalized bonds :

1-2 1-6 2-3 3-4 4-5 5-6

G1:C,O

G2:Cl,F,S,CF2,CF3,CN

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:CLASS8:Atom 9:Atom 10:Atom 11:Atom 12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom 22:CLASS23:CLASS

=> s 17 not 13
12 L7
4 L3
L8 8 L7 NOT L3

=> dis 1-8

L8 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:1252979 CAPLUS
DN 146:36424
TI Method for producing tetrahydropyranes from tetrahydropyran-3-ones
IN Taugerbeck, Andreas; Lietzau, Lars
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 41pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | WO 2006125550 | A1 | 20061130 | WO 2006-EP4607 | 20060516 |
| | W: | | | | |
| | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, | | | | |
| | CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, | | | | |
| | GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, | | | | |
| | KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, | | | | |
| | MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, | | | | |
| | SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, | | | | |
| | VN, YU, ZA, ZM, ZW | | | | |
| | RW: | | | | |
| | AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, | | | | |
| | IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, | | | | |
| | CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, | | | | |
| | GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, | | | | |
| | KG, KZ, MD, RU, TJ, TM | | | | |

PRAI EP 2005-11320 A 20050525

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:1250978 CAPLUS
DN 146:36420
TI Formyltetrahydropyrans, method for the production thereof, and use thereof
in the production of liquid crystal compounds
IN Poetsch, Eike; Meyer, Volker; Binder, Werner; Lietzau, Lars; Jaehrling,
Kai; Burek, Kasimir
PA Merck Patent G.m.b.H., Germany
SO PCT Int. Appl., 72pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|---|------|----------|-----------------|----------|
| PI | WO 2006125529 | A1 | 20061130 | WO 2006-EP4424 | 20060511 |
| | W: | | | | |
| | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, | | | | |
| | CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, | | | | |
| | GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, | | | | |
| | KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, | | | | |
| | MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, | | | | |
| | SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, | | | | |
| | VN, YU, ZA, ZM, ZW | | | | |
| | RW: | | | | |
| | AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, | | | | |
| | IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, | | | | |
| | CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, | | | | |

GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM

PRAI EP 2005-11321 A 20050525

OS MARPAT 146:36420

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:1249234 CAPLUS

DN 146:36018

TI Liquid crystalline medium showing improved high dielectric anisotropy,
nematic phase range, and birefringence and liquid crystal display

IN Czanta, Markus; Manabe, Atsutaka; Lietzau, Lars; Wittek, Michael

PA Merck Patent GmbH, Germany

SO Eur. Pat. Appl., 66pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|------------------|----------|
| PI | EP 1726633 | A1 | 20061129 | EP 2006-10227 | 20060518 |
| | R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, MK, YU | | | | |
| | KR 2006121690 | A | 20061129 | KR 2006-45599 | 20060522 |
| | US 2006278850 | A1 | 20061214 | US 2006-439532 | 20060524 |
| | CN 1869792 | A | 20061129 | CN 2006-10084515 | 20060525 |
| | JP 2006328399 | A | 20061207 | JP 2006-144861 | 20060525 |
| PRAI | EP 2005-11326 | A | 20050525 | | |
| | EP 2005-22352 | A | 20051013 | | |

OS MARPAT 146:36018

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:1059445 CAPLUS

DN 142:46068

TI Liquid crystalline compounds for liquid crystal mixture suitable for
liquid crystal display

IN Kirsch, Peer; Poetsch, Eike; Hahn, Alexander; Binder, Werner; Meyer,
Volker; Heckmeier, Michael; Luessem, Georg; Klasen-Memmer, Melanie

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 75 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|----|--|------|----------|----------------------|----------|
| PI | WO 2004106459 | A1 | 20041209 | WO 2004-EP5538 | 20040524 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| | RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| | DE 102004025808 | A1 | 20041216 | DE 2004-102004025808 | 20040524 |
| | JP 2007506798 | T | 20070322 | JP 2006-529902 | 20040524 |

US 2007034828 A1 20070215 US 2005-558205 20051125
PRAI DE 2003-10324345 A 20030527
WO 2004-EP5538 W 20040524

OS MARPAT 142:46068

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:1035069 CAPLUS

DN 142:30325

TI Pyran derivatives for use in liquid crystal media

IN Poetsch, Eike; Binder, Werner; Meyer, Volker; Heckmeier, Michael; Luessem, Georg

PA Merck Patent GmbH, Germany

SO Eur. Pat. Appl., 110 pp.

CODEN: EPXXDW

DT Patent

LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|----------------------|----------|
| PI | EP 1482019 | A1 | 20041201 | EP 2004-10357 | 20040430 |
| | EP 1482019 | B1 | 20060927 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR | | | | |
| | DE 102004021338 | A1 | 20050303 | DE 2004-102004021338 | 20040430 |
| | AT 340836 | T | 20061015 | AT 2004-10357 | 20040430 |
| | JP 2004352721 | A | 20041216 | JP 2004-157022 | 20040527 |
| | US 2005017216 | A1 | 20050127 | US 2004-854718 | 20040527 |
| PRAI | DE 2003-10324312 | A | 20030527 | | |

OS MARPAT 142:30325

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:449725 CAPLUS

DN 135:53593

TI Pentafluorosulfuranyloxybenzene derivative for liquid crystalline medium suitable for liquid crystal display

IN Kirsch, Peer; Krause, Joachim; Heckmeier, Michael

PA Merck Patent G.m.b.H., Germany

SO Ger. Offen., 24 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|------------------|------|----------|------------------|----------|
| PI | DE 10058472 | A1 | 20010621 | DE 2000-10058472 | 20001124 |
| PRAI | DE 1999-19961303 | A1 | 19991218 | | |

OS MARPAT 135:53593

L8 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:561778 CAPLUS

DN 131:177465

TI Perfluoroalkyl-tetrafluorosulfanyl derivative and liquid crystalline medium containing the same

IN Kirsch, Peer; Tarumi, Kazuaki; Krause, Joachim

PA Merck Patent G.m.b.H., Germany

SO Ger. Offen., 40 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|------------------|----------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | DE 19807372 | A1 | 19990826 | DE 1998-19807372 | 19980221 |
| PRAI | DE 1998-19807372 | | 19980221 | | |
| OS | MARPAT 131:177465 | | | | |

L8 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2007 ACS on STN
 AN 1999:308641 CAPLUS
 DN 130:330632
 TI Sulfur pentafluoride derivative and liquid crystal medium
 IN Kirsch, Peer; Tarumi, Kazuaki; Krause, Joachim
 PA Merck Patent G.m.b.H., Germany
 SO Ger. Offen., 40 pp.
 CODEN: GWXXBX

DT Patent
 LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|------------------|----------|
| | ----- | ---- | ----- | ----- | ----- |
| PI | DE 19748109 | A1 | 19990506 | DE 1997-19748109 | 19971031 |
| | DE 19748109 | B4 | 20060907 | | |
| PRAI | DE 1997-19748109 | | 19971031 | | |
| OS | MARPAT 130:330632 | | | | |